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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/766,505

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Jozef Brcka

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WOOD, HERRON & EVANS, LLP (TOKYO ELECTRON)

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EXAMINER

ARANCIBIA, MAUREEN GRAMAGLIA

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

04/11/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/766,505	Applicant(s) BRCKA, JOZEF	
	Examiner Maureen G. Arancibia	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 34-47 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,089,182 to Hama.

In regards to Claims 34-47, Hama teaches an ICP apparatus (Figure 1) comprising: a vacuum processing chamber 102a (i.e. the interior processing space of outer process container 102), a dielectric window 118d (Column 5, Lines 26-28) having a vacuum chamber side and an outside; a means for coupling RF energy into the plasma processing chamber including an inductor 120 (Figure 2), comprising: a conductor formed of a sheet of electrically conductive material (Column 5, Lines 46-49) in the shape of at least one loop having opposite edges encircling an axis, the sheet having: a gap extending between the opposite edges and defining a pair of terminal ends (center of the inductor 120, and any one of the four ends of the inductor, illustrated at the four corners in Figure 2); and the opposite edges including an inner edge and an outer edge, each having a plurality of cutouts (notches 120a) that require current flowing between the terminal ends to flow around the outside of the cutouts in the inner edge and around the inside of the cutouts in the outer edge, wherein: the cutouts are alternately spaced at equal angular intervals around the axis in the inner and outer

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opposite edges, the cutouts in the outer edge extend sufficiently radially inward to interrupt the shortest current paths around the outside of the cutouts in the inner edge, the cutouts in the inner edge extend sufficiently radially outward to interrupt the shortest current paths around the inside of the cutouts in the outer edge; the opposite edges thereby define a sinuous serpentine conductive path that alternately curves inwardly around the outside of the cutouts in the inner edge and curves outwardly around the inside of the cutouts in the outer edge, in a plurality of oscillations between the terminal ends, and the at least one loop includes a series of segments of alternating high and low cross-sections and widths (the irregularly shaped notches 120a create segments of alternating higher and lower cross-sections and widths; Figure 2); and an RF power source 126 connected across the ends of the inductor (i.e. one terminal end of the inductor is connected to electric supply passage 122a supplying the RF power from RF power source 126, and another terminal end of the inductor is connected to ground line passage 122b). (Figures 1 and 2)

It is implicit in the teachings of Hama that a pair of power source connectors, as broadly recited in the claims, are attached to each of the terminal ends, since the terminal ends are indeed connected to electric supply passage 122a and ground line passage 122b, as discussed above.

It is noted, as discussed above, that the interior processing space 102a of outer process container 102 as taught by Hama is considered to meet the recitation of a vacuum processing chamber in the claims. Process gas supply layer 118d, made of quartz (Column 5, Lines 26-28) is considered to meet the recitation of a dielectric

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window in the claims, since electromagnetic energy is applied to interior processing space 102a from the inductor 120 through the process gas supply layer 118d (ex. Column 5, Lines 16-65). Process gas supply layer 118d is considered to form part of a chamber wall of interior processing space 102a, as broadly recited in the claims, in that process gas supply layer 118d defines the spatial extent of interior processing space 102a. Process gas supply layer 118d has a chamber-facing side and an outside. The inductor is outside of the process gas supply layer 118d (dielectric window) and outside of the interior processing space 102a (vacuum processing chamber) in that it is outside of and sealed off from the interior processing space 102a (above the process gas supply layer 118d; Figure 1). The inductor is provided generally congruent to the process gas supply layer 118d (dielectric window), the widths being generally parallel to the dielectric window and the thicknesses being generally perpendicular to the dielectric window. (Figures 1 and 2; Column 5, Lines 46-49)

Further in regards to Claims 34-47, Examiner notes the means-plus-function language, namely the recitation of a means for coupling RF energy from the RF power source into the plasma processing space within the chamber in a spatially distributed ring, around and centered on the axis, in an alternating high and low plasma density distribution, wherein small cross-section segments of the loop couple energy into the high power density segments of the plasma and the large cross-section segments of the loop couple energy into the low power density segments of the plasma. Examiner notes that this means plus function language has not been given a full 35 U.S.C. 112, sixth

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paragraph interpretation, since sufficient structural limitations modify the means-plus-function to achieve the specified function.

The inductor 120 taught by Hama has all of the specified structural features of the claimed invention, and would be structurally capable of performing the specified function of coupling RF energy from the RF power source into the plasma processing space within the chamber in a spatially distributed ring, around and centered on the axis, in an alternating high and low plasma density distribution, wherein small cross-section segments of the loop couple energy into the high power density segments of the plasma and the large cross-section segments of the loop couple energy into the low power density segments of the plasma, since the irregularly shaped notches 120a create segments of alternating higher and lower cross-sections and widths in the inductor 120 (Figure 2), and such segments would necessarily create alternating localized areas of lower power density or higher power density due to the relative concentration of the applied RF power by the conductive segments. It is noted that Hama's teaching that the plasma produced in the chamber is uniform *taken as a whole* does not obviate the structural capability of the segments to produce *localized* regions of higher or lower plasma density. It is noted that the inductor disclosed in the instant application similarly produces alternating regions of higher or lower plasma density with the goal of producing an overall uniform plasma. (See for example Paragraphs 8-10 of the instant Specification.)

It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120

USPQ 528, 531 (CCPA 1959). Also, a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Response to Arguments

3. Applicant's arguments filed 10 January 2008 have been fully considered but they are not persuasive.

Specifically, in regards to Applicant's argument that Hama does not anticipate the claimed functional limitations of the claimed inductor, Examiner must disagree. Examiner's position regarding the teachings of Hama in regards to the newly added functional limitations is fully set forth in the rejection above.

Conclusion

4. Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571)272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Maureen G. Arancibia/
Examiner, Art Unit 1792

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1792